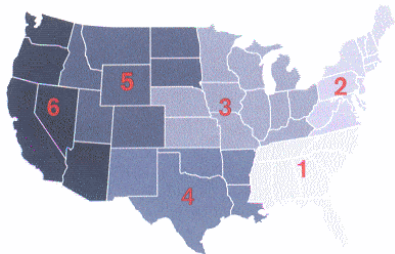


CSCI459/CSIS659 – Service Oriented Computing
Term: Fall 2014
Instructor: Paul Buhler
Programming Assignment

Due date: Wednesday, Nov 19th at 11:59 pm – detailed submission instructions will be forthcoming.



Zone 1: AL, FL, GA, MS, NC, SC, TN
Zone 2: CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV
Zone 3: IA, IL, IN, KS, KY, MI, MN, MO, NE, OH, WI
Zone 4: AR, LA, NM, OK, TX
Zone 5: CO, ID, MT, ND, SD, UT, WY
Zone 6: AZ, CA, NV, OR, WA

Find the fare for the route you are traveling, then call Delta at 1-800-325-1447 or your Delta-authorized travel agent to book your travel. Pay for your ticket with your Platinum Delta SkyMiles Credit Card, and get two tickets for one low price. Remember to refer agent to code **G*12100** when booking your ticket.

Travel	Round-Trip Fare
Within a zone	\$238
Between zones 5 and 6	\$238
Between zones 1, 2 and 3	\$278
Zone 1, 2, 3 to/from zone 4	\$318
Zone 1, 2, 3, 4 to/from zone 5 and 6	\$398

Example: If you and a companion fly from Atlanta (zone 1) to San Francisco (zone 6), the special zone fare for two round-trip tickets will be \$398 (plus any applicable taxes and fees – see certificate for more details). All tickets must be booked in L class, subject to seat availability.

This assignment will serve as a capstone to our development activities this semester. You will use the LSPS orchestration platform to generate an executable process that has the following specification: it will accept from the user two continental USA airport codes and will display the fully loaded airfare that is the cost of the fare.

The sequence and flow of the process will be as follows –

1. Call the FAA airport status web service described here:
<http://services.faa.gov/docs/services/airport/>
2. Pull the state names out of the response from the FAA service and use them to obtain the zones as defined by the Delta Simple Fares advertisement above. You will accomplish this with by leveraging the eXist NXD Restful query interface that was explored earlier in the semester.
3. Using the zones from step 2, generate the base fare between the departure and arrival zones. This again will leverage the eXist NXD Restful query interface.
4. Compute the full-fare from the base fare with the following equation and the Expression Tree Evaluator code.

Fully loaded airfare = base airfare + (base airfare * sales tax) +
airport passenger facility charge + 9/11 security fee + federal segment fee

Where:

- base airfare = output from step 3
- sales tax = 10%
- airport passenger facility charge = \$18
- 9/11 security fee = \$10
- federal segment fee = \$12.40

The fully loaded airfare equation has been converted into a MathML expression tree. Before calling the ExpressionTreeEvaluator, you will need to update the xxx.xx values in the MathML document with the base airfare amount. Use eXist to hold the MathML equation document.

The MathML expression has the following form:

```
<?xml version="1.0" encoding="UTF-8"?>
<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1998/Math/MathML
http://www.w3.org/Math/XMLSchema/mathml2/mathml2.xsd">
  <mml:apply>
    <mml:plus/>
    <mml:apply>
      <mml:plus/>
      <mml:cn>xxx.xx</mml:cn>
      <mml:apply>
        <mml:times/>
        <mml:cn>xxx.xx</mml:cn>
        <mml:cn>0.10</mml:cn>
      </mml:apply>
    </mml:apply>
  </mml:math>
```